# W5YI

**Nation's Oldest Ham Radio Newsletter**

# REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable. May be reporduced providing credit is given to The W5YI Report.



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★ *In This Issue* ★




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## Morse Code Change "On The Table" For WRC-95 Action!

According to ORACLE's Dave Walker, ZL2BHE, New Zealand's Ministry of Communications has completed and publicly released their WRC-95 proposal to eliminate Morse Code proficiency as a prerequisite for amateurs wishing to access the high frequency ham bands.

ORACLE, which stands for the *Organization Requesting Alternatives by Code-Less Examinations, Inc.*, is a break-away group whose leadership were previously associated with New Zealand's national radio society, *New Zealand Amateur Radio Transmitters, Inc.* (NZART.) Rather than go through NZART or International Amateur Radio Union (IARU) channels, ORACLE elected to directly lobby New Zealand's telecommunications regulatory body, the Ministry of Communications.

The MOC is now in the process of forwarding the proposal to officials at the ITU in Geneva and other administrations where it will become an input document to the World Radio Conference which begins October 24th. Here is the exact wording of the New Zealand proposal: (Quote)

SUP RR2735 (S25.5)
[Suppress RR2735. New regulation No. S25.5]

Reason: This provision does not mandate for specific qualifications and as such is not considered appropriate in a treaty text. RR2736 (S25.6) additionally allows administrations to have in place and agree on any technical or operational provisions or accords that may be deemed necessary. It is not intended that any existing reciprocal agreements that contain a Morse code component be modified as a result of this proposal, but administrations would be able to modify their national requirements if desired. (End Quote)

The current RR2735 reads:
"Section I, §3(1): Any person seeking a license to operate the apparatus of an Amateur station shall prove that he is able to send correctly by hand and to receive correctly by ear, texts in Morse code signals. The administrations concerned may, however, waive this requirement in the case of stations making use exclusively of frequencies above 30 MHz." [Note: Until the 1979 World Administrative Radio Conference, the cut-off frequency was 144 MHz.]

New Zealand believes that the following Radio Regulation 2736 is all that is necessary for the ITU countries to require Morse code proficiency if they believe it important.

"Section I, §3(2): Administrations shall take such measures as they judge necessary to verify the operational and technical qualifications of any person wishing to operate the apparatus of an amateur station."

It must be emphasized that even if the WRC-95 delegates agree to suppress RR2735, ITU member countries would still have to amend their amateur service regulations accordingly.


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Abolishing RR2735 only provides the regulatory climate for a nation to eliminate the HF Morse code proficiency requirement. At present, international law provides that (at least in theory) no country may permit a ham operator to access any frequency below 30 MHz unless the applicant proves that he or she can manually send and receive Morse code.

We say "in theory" because at least one country (Japan) permits low power HF voice operation without telegraphy knowledge. Japan authorizes no code HF operation on the basis that the low 10 watt power provides only short range communications which does not cause interference to other stations.

**The New Zealand position**

While welcomed by many, the New Zealand position is apparently in direct opposition to the wishes of most New Zealand amateurs and the IARU which represents the amateur radio service across the globe. The IARU has ITU official (non-voting) observer status at international radio conferences.

In 1994, the IARU conducted a CW feasibility study. Among the three member IARU-appointed study group were NZART's Fred Johnson ZL2AMJ (Chairman) and ARRL's David Sumner, K1ZZ. The committee concluded that Morse proficiency for operation below 30 MHz was indeed necessary and their findings were published in a December 1994 26-page report entitled, "The Morse Code and Amateur Radio." All three IARU Regions endorsed the study and agreed to support retention of mandatory Morse code testing.

**The Voluntary Group of Experts (VGE)**

The VGE are individuals whose duty it is "...to study Allocation and Improved use of the Radio-frequency Spectrum and Simplification of the Radio Regulations." Their final report has already been submitted to Geneva and no change was proposed for RR2735.

But the VGE did propose to suppress RR2800 in favor of RR2801. RR2800 requires manual telegraphy proficiency for experimental stations while RR2801 permits nations to "...take such measures as they judge necessary to verify the operational and technical qualification of any person wishing to operate the apparatus of an experimental station."

It is ORACLE's position that RR2735 and RR2736 are similar to RR2800 and RR2801. And they believe that the WRC-95 handling should also be the same. It should be pointed out that the VGE have no powers over members of the ITU and any member nation can introduce further discussion with respect to the report of the VGE. The New Zealand Ministry of Communications will propose the suppression of RR2735 as part of Agenda item No. 1, Simplification of the Radio Regulations.

If the New Zealand proposal prevails at WRC-95, it wouldn't be the first time that an international body has removed a Morse code requirement over the objections of its users. The International Maritime Organization voted on November 11, 1988 to phase out manual commercial radiotelegraphy at sea over the intense objections of radio officers and their unions.

Like the ITU, the IMO is a United Nations agency. It is charged with promoting safety at sea. *(See W5YI Report, Dec. 1, 1988.)* All nations are now in the process of implementing the *Global Maritime Distress and Safety System.* GMDSS employs ship-to-shore high technology automatic satellite positioning and float-free radio beacons rather than ship-to-ship radiotelegraph communications.

One of the editors of "*Morsum Magnificat, The Morse Magazine*" wrote New Zealand's Minister of Communications. He replied (quoted from current issue of magazine):

"The appropriateness of the mandatory requirement that Morse proficiency, for access to frequency bands in the amateur service below 30 MHz, being part of an international treaty, has been under consideration for some time in New Zealand.

"However, this is merely one element in the overall process of Simplification of those Regulations, in which new Zealand has played quite a major part. It is the view of the officials within my Ministry that much more flexibility for the regulatory regime surrounding amateur radio would be achieved if administrations could take such measures as they judge necessary to verify the operational and technical qualifications of any person wishing to operate the apparatus of an amateur station. This is provided for already in No. 2736 of the Radio Regulations. I share the view of my officials.

"I am advised that the proposals will be sent to the International Telecommunications Union shortly, where they will be published and distributed to all other administrations.

"If there is little or no support, for the New Zealand proposals, then so be it. The conference itself will decide whether there is merit in the New Zealand position.

"I note your comments about the numbers of active amateur radio operators who still practice Morse telegraphy and the part that Morse plays in the amateur service. Accepting that, I would not expect this situation to change because of the proposal to suppress No. 2735 of the Radio Regulations. ..." [signed] Hon. Maurice Williamson, Minister of Communications. Parliament Buildings, Wellington, New Zealand.

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**October 1, 1995**


## HAMS ASSIST WITH HURRICANE LUIS AND MARILYN

Radio amateurs played a significant roll with emergency communications in the Caribbean during the recent devastating storms. Hurricane Luis loomed as a real threat around September 3, 1995 and looked like it was a sure bet to hit major areas such as St. Croix and Puerto Rico.

The U.N. Radio readiness group on 14.268 MHz. became active about this time with Senior controllers K4VUD, Charlie; K1WW, Ray; and KE4AMW, Dave. They had stations from the affected areas checking in regularly with situation reports including Dorthea, VP2EE in Anguilla.

IARN, the International Amateur Radio Network, managed by Glenn Baxter, K1MAN, activated on September 4, 1995. Baxter told W5YI that traffic was light and IARN went in and out of activation several times because of this. Luis eventually turned away and thus only affected islands such as Anguilla and St. Martin.

Enter Hurricane Marilyn. On September 15, 1995, Marilyn took dead aim again. Ham operators bunkered deep within an old San Juan Spanish fort that serves as the Puerto Rico Civil Defense headquarters, were the first to shed light the following morning on what Marilyn had wrought. By relaying faint radio signals to local and federal authorities, they gave officials the first inkling of what would be confirmed painfully later in the day - St. Thomas had been clobbered by Marilyn's 100 mph-plus winds.

Several hundred amateur radio operators belong to the United Nations Radio Readiness Network in Puerto Rico. In natural disasters, the network comes on "full alert" and operators take turns describing the situation in their areas. Their job is to establish the situation and pass it on to Civil Defense authorities and let them handle it. UNRRG activated on 14.268 and IARN activated on 14.275.

For UNRRG, It was a repeat of what happened a week earlier when Hurricane Luis pounded Antigua and Barbuda, St. Kitts and Nevis and St. Martin. Through them, U.S. government agencies first learned of the damage to those islands.

The UNRRG concentrated on situation reports and priority traffic while IARN concentrated on Health and Welfare messages. "IARN is driven by traffic and the media" according to Glenn Baxter, K1MAN, IARN's Manager. On Saturday, September 16, 1995, Baxter was interviewed by the CBS radio network and parts of that interview were carried by coast-to-coast on CBS. The Associated Press carried a story about the activity of the United Nations Radio Readiness Network.

Baxter says that "Traffic has been heavy and has come in by Packet, AMTOR, FAX, BBS, E-Mail, telephone, and SSB."

On September 18, 1995, the U.N. Group on 14.268 MHz. secured its net operations and live voice operations moved to 14.300 MHz. where the Maritime Mobile and Intercon nets operate daily. IARN has been on 14.275 and 3.975 MHz. continuously and is working with America On Line, the Air Force's National Security Planning group (NSEP), and other groups, according to Baxter. As W5YI goes to press, IARN is setting up AMTOR and SSB stations on St. Croix and St. Thomas. Baxter says that Motorola, MFJ, and American Airlines are donating both equipment and services to IARN's, operations.

IARN's Roger Clapp, WA6JMK, told W5YI that "St. Thomas is a disaster, and Hurricane Hugo in 1989 was a cake walk by comparison." He says that there is no gas, water, or electricity. Roads are blocked and getting around is difficult. St. Croix is 30% as bad. "We have five stations in St. Thomas, eight in St. Croix, one in Anguilla, and one on St. John. There has been only outgoing traffic and it has been heavy" according to Clapp. According to Baxter, FEMA and Red Cross are on St. Croix and St. Thomas and have commercial satellite links. As we go to press, Red Cross is still refusing to accept Health and Welfare traffic.

ARRL is routing all of its NTS traffic to KP4GE in Puerto Rico who is trying to pass it by SSB voice on 40 meters. According to ARRL's Steve Ewald, KP4GE in Puerto Rico is totally overloaded with Health and Welfare traffic. Steve feels that two or three packet stations on both St. Thomas and St. Croix could be very effective.

Glenn Baxter, K1MAN, said many shelters on St. Thomas were destroyed and cannot be used. At the airport, air traffic controllers are using binoculars and hand-held radios to bring in aircraft which is being restricted to military and private relief. He says that 16 critical cases in the hospital that was destroyed on St. Thomas have been evacuated to San Juan. "For information on these people you can call P.R. Red Cross at 809/725-0121" according to Baxter. "Thousands of people scramble for food when it is distributed and it gets quite nasty."

There seems to be a great deal of cooperation among radio amateur groups and individuals in this communications emergency. Many TV crews have descended on ham shacks across the United States, and many stations are airing IARN numbers for people to call with Health and welfare inquiries. These are: K1MAN @ K1RQG.ME.USA.NA; the AMTOR mailbox is on 14.0762 LSB with SEL call KMAN; the E-Mail address is K1MAN @ mcimail.com; the FAX number is 207/495-2069; the telephone BBS is 207/495-2490; and the voice line is 207/495-2215.

## "PARALYZING" FCC BUDGET CUTS PROPOSED

Adding insult to injury, the Senate Appropriations Subcommittee voted to reduce the FCC's Fiscal Year 1996 budget to $148 million, $37.2 less than the $185.2 million appropriated by the House. The subcommittee wants a 20% across-the-board budget cut for all federal regulatory agencies under its jurisdiction.

FCC Chairman Reed Hundt had asked for $223.6 million for FY-96. That amount included $25 million to relocate the FCC to new quarters and another $10 million to upgrade its computer equipment. Some members of the subcommittee told Hundt that they would try to restore the money when the budget is considered by the full committee.

When the full committee met, however, they only added $18 million to the $148 million funding that the subcommittee had approved The new plan is to give the FCC a budget of $166 million - a cut of 10% over what the House Commerce Committee approved.

The House proposed budget has already forced the FCC to cut its staff by 10%. More than half of the Commission's budget is already covered by user ($116 million) and application fees (another $40 million.) Hundt feels that a portion of spectrum auction income should be used to fund the balance of the FCC budget since his agency must administer the program.

Hundt contends that the reduced budget "would cause not cuts, but amputations." He said it "will hurt the growth of our economy, severely harm our developing communications industries, reduce the money we can raise through auctions to close the deficit gap, make it impossible for us to perform the duties Congress has delegated to us, and will leave consumers exposed to crimes and frauds on the information highway that we will be able to do nothing about."

"Without sufficient resources, consumers will not be able to count on the FCC to help them find their way down the fast lanes of the information superhighway in the dizzying new world of convergence and competition, if there is to be any."

Hundt characterized the agency as "the biggest cash cow" in the entire history of government. "To date, it has returned over $9 billion dollars to the Treasury and the U.S. taxpayer as a result of the auctions of radio spectrum which it has conducted in record speed and to universal acclaim. This was almost fifty times the total FCC appropriation for FY 1995. The Senate subcommittee appropriations would kill this cash cow, even while we're trying to milk it for billions of more dollars in auction revenue."

The $166 million budget would require "hundreds and hundreds of immediate terminations here at the Commission." Hundt said. "The Agency would be paralyzed..."

- **Some commercial broadcasters, however, are not convinced that spectrum auctions - or even spectrum - will be needed.** The September 11th *Broadcasting and Cable* magazine says that within ten years, the Internet's World Wide Web is expected to be a $5 billion industry. Digital web-casting offers advantages not found in traditional broadcasting such as the ability to accurately measure the audience ...and to poll and interact with listeners.

"More than 530 radio stations now have individual Web sites on the Internet." There are 30 million Internet subscribers and the Internet is growing by about 30% per year. Internet access providers and online companies now take in about $50 million annually in usage fees. "...as the industry grows, advertising is expected to drive down user fee costs to the point where advertisers will support the medium."

Microsoft said it expects that standard PCs in the future will contain digital broadcast receivers.

- **Wringing billions out of thin air! High definition television (HDTV) is still on the drawing boards and Congress plans to reap a windfall when the national television system is rebuilt.** Congress, the administration and the FCC are committed to raising $14.3 billion in spectrum revenues and fees over the next seven years to meet budget-balancing goals. Selling "nothing" for "something" seems like a good way to do it. By law, all spectrum allocated after July 26, 1993 is sold to the highest bidder.

One plan under consideration by the FCC is to give every TV station in the U.S. a second channel at no cost that will be used for digital broadcasting. After a transition period, the old analog 6-MHz channel must be returned to be sold at auction. Some critics, however, are opposed ...calling it a spectrum "give-away."

Another Senate plan has now emerged proposing to sell digital television licenses in the top 25 media markets. Broadcasters say it will end free television. They want the FCC to free up and auction more government spectrum.

Big market auction winners could begin digital broadcasting in 1998. Buyers could also use the spectrum in any way they wish. No one knows how much digital stations in the top 25 markets are worth, but it would be billions! Another plan we heard was to charge broadcasters a one to three percent of revenue spectrum fee.

A 15 year transition period to digital TV was originally planned but the thinking is now to reduce this to seven years to meet budget constraints. Besides sharper pictures, a big advantage of digital television is that stations can also offer other digital services such as paging, telephone and data transmission. Digital television requires consumers to purchase a completely new TV set ...or at least a converter box.

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## COMPUTER AND ONLINE NEWS

• **According to MCI, the Internet News Center (INC) will be "like a newspaper city desk, a television newsroom and a high-tech computer center - all rolled into one."** Rumors abound about the deep-pocketed online co-operative venture of Australian media mogul, Rupert Murdock's News Corp. and MCI Communications. A digital newsroom is now in the process of being formed on the Internet's World Wide Web. The idea is to do for the Internet what Ted Turner and CNN did for cable TV.

The Internet News Center will provide 24-hour text, photos (taken with digital cameras), video clips and sound bites over the Internet. News Corp./MCI Ventures has already hired journalists Jonathan Miller of the *London Sunday Times* and Lew Silverman, formerly of *The MacNeil-Lehrer News Hour* to head the production team. A "beginning" 24 journalists (who will have interactive capability with their audience) have already been signed up to provide content and more are planned. *Bloomberg Financial Market's* news services will handle the financial section.

MCI also plans a new multi-million dollar "That's how" advertising campaign that will show that Internet technology is a simple and needed business tool. The campaign will also run on its home page, http://www.mci.com.

• **Internet upstart Netscape Communications already owns 75% of the Web browser market.** But they aren't resting on their laurels! Netscape just introduced two new browsers. The new **Netscape Navigator 2.0** includes electronic mail, file transfer and a security user authentication routine. The **Netscape Gold** browser contains electronic publishing tools that make it easy for people to construct web pages. Their goal is to get to the marketplace before Microsoft unleashes their "Blackbird" publisher. Another two new programs are also available for downloading from Netscape's home page: **Netscape SmartMarks** saves web addresses. **Netscape Chat** permits real-time back-and-forth communications.

Netscape also says they will allow free downloading of their secure commercial browser which contains stronger 128-bit encryption. Most Netscape browsers contain only the weaker 40-bit scheme which was recently cracked by a European hacker. Netscape did not say how they would keep foreign users from downloading the 128-bit software which the U.S. government does not allow to be exported. Available from web site: http://home.netscape.com

• **Overload "brown-outs" are slowing down the Internet.** So says weekly trade publication, *ComputerWorld*. During one three hour period last month, millions of users suffered long delays in connecting to the Internet and accessing Web sites. The problem was traced to a single user in Japan who attempted to broadcast a single message to the entire Internet community!

The number of information servers feeding the Internet has doubled every year for the last five years. And the 80,000 networks will more than double again in the coming year! Commercial users now account for more than half of the Internet domain registrations. The answer? Internet "backbones" must be upgraded to support the tremendous increase in users, traffic growth and new high-bandwidth applications such as video.

• **By the way, the Microsoft Network signed up 200,000 subscribers the first week** - about 20% of those who purchased Windows 95. Trivia: It took 40 days to sell one million copies of MS-DOS 6.0, 50 days for Windows 3.1. One million copies of Windows 95 was sold in only 4 days!

• **There is a neat story in the October 2nd issue of Fortune Magazine about how billionaires Bill Gates and Paul Allen started Microsoft.** Here is a quick capsule resume:

1.) In 1968, the mothers of Gates (age 13) and Allen (age 15) funded a computer terminal at Seattle's Lakeside School.

2.) In 1971, Allen found an article in an electronics magazine about Intel's 4004 microprocessor. A year later, Intel came out with the 8008.

3.) They bought an 8008 for $360, wrote a version of BASIC (programming language) and built a special computer to do traffic-volume-count analysis. They called it the Traf-O-Data.

4.) Gate's parents wanted him to enroll at Harvard. He does and Allen joins him in the Boston area.

5.) In 1974, they see an article in Popular Electronics magazine about the MITS Altair 8800, the "*World's First Minicomputer Kit to Rival Commercial Models.*" They convince MITS to sell their BASIC which would work on the Altair.

6.) MITS offers Gates and Allen a job and they move to office space in a run-down Albuquerque strip mall. Gates drops out of Harvard.

7.) Thinking that microcomputers would be powerful and cheap, in 1975 they start "Micro-Soft" in Albuquerque.

8.) In 1979 they transplant the business to the Seattle suburb of Bellevue, Washington.

9.) "Our basic strategy was to charge a price so low that microcomputer makers couldn't do the software internally for that cheap."

10.) IBM calls on them in 1980 looking for an operating system and programming languages for its secret PC project. They license Q-DOS to IBM after paying Seattle Computer $50,000 for the program which they rename MS-DOS. IBM pays them $186,000 but Gates retains the right to sell versions of DOS to other manufacturers.

11.) They incorporate the name Microsoft in 1981 (without the hyphen and capital "S.")

12.) Microsoft sells millions of copies of MS-DOS, then Windows ...and now Windows 95 (besides other application software.)

13.) Twenty years after starting the company, Microsoft has a market capitalization of $60 billion, annual sales of $6 billion, and $1.5 billion in earnings.

14.) Allen left Microsoft in 1983 with a 9.6% stake. He is worth $5.3 billion and - among other investments - owns the NBA's Portland Trail Blazers.

15.) Still only 39 years old, Gates 25% stake is worth $13.4 billion - making him the world's wealthiest.

16.) "Just to keep running at break-even we have to sell $15 million a day."

## U. S. GOVERNMENT HAPPENINGS

• **Potty-mouthed Howard Stern's employer, Infinity Broadcasting has agreed to pay a $1.7 million "voluntary contribution" to the U.S. treasury.**

The settlement is which admits "no wrong-doing" cancels $1.7 million in FCC fines. Infinity Broadcasting settled once an appeals court agreed with the FCC's ban of indecent broadcasts between 6 a.m. and 10 p.m. Infinity must also conduct an indecency awareness program for its on-air personnel. It is a "big win" for the FCC and the largest payment ever paid to the government.

• **We find this hard to believe, but Postmaster General Marvin Runyon says that lower postal rates are coming!** Mail volume is up for fiscal 1995 ...to some 180 billion pieces. But market share is being lost to competitors due to high tech inroads being made in most product lines including correspondence, transactions, publications, packages, expedited mail and international mail. Advertising mail is the only product line where the USPS has a bigger piece of the pie. Electronic messaging grew 122% in 1994 alone.

• **Vanity call signs come to the Internet.** The assigning of Internet domain names is a federally backed program conducted by InterNIC Registration Services. A domain name is the next to the last word in an Internet address and indicates the location of the computer information server. It usually follows the "@" sign. Ordinarily a commercial entity is allowed only one name.

An investigation resulted after Procter & Gamble Co. and Kraft Foods reserved nearly 200 "vanity" Internet domain names that push their brand names and product categories (including - if you can believe it - flu.com and diarrhea.com.") Some individuals even registered names and then tried to sell them to user groups and corporations.

Effective September 14th it will cost $100 to register an Internet domain name for first two years and then $50 a year afterward to maintain the personalized domain. It used to be free. There is, of course, no fee for individual user names within a domain.

Network Solutions, Inc., the Herndon, Virginia company that signs up names for the Internet handles some 14,000 registrations a month. The new fee shifts the cost to the user and will save the American taxpayer who had been footing the bill under a government contract. Would-be competitors of Network Solutions are not happy that there was no bidding process to offer personalized names for a fee. They too want to issue "vanity" domain names.

• **Six hackers were arrested in New York, New Jersey, California and Texas when federal Secret Service agents set up a sting operation** to catch computer hackers who dealt in stolen cellular telephone and credit cards. A computer bulletin board (called Celco51) was established on the Internet as a meeting place for hackers. Undercover agents posed as interested buyers. Those jailed face up to 15 years in prison and a $250,000 fine.

## EMERGING TECHNOLOGY

• **Several high-tech companies (including IBM, CompuServe, Microsoft, AT&T, MCI, Time-Warner, American Online and Netscape) are funding a project to develop pornography blocking technology for the Internet.** The goal is to produce a voluntary ratings standard and blocking software before Congress passes stricter obscenity regulations. The project will be managed by the Massachusetts Institute of Technology's *World Wide Web Consortium.* Hailed as the Internet version of the television violence-blocking "V-chip," the *Platform for Internet Content Selection* (...or PICS) rating system is somewhat similar to that used by the movie industry. A family simply selects their household computer decency guidelines. The software blocking tools are expected to be available within six months.

• **America Online, Inc. says it won't tolerate illegal activities on its network but admits there is not much they can do about it.** Federal law prohibits the company from screening user e-mail for obscene material. Critics say online consumer services are contributing to the problem by promoting chatrooms that permit anonymous log-on. Some legislators want to go after the on-line service rather than the end user. The networks argue that this is similar to holding the post office responsible for any illegal material that gets mailed.

But reports of illegal activity do find their way to those in charge. AOL recently worked with the government to tap into the supposedly confidential e-mail accounts of users exchanging digitized child pornography. More than 100 homes and offices of users were recently raided by the FBI.

In another incident, AOL has taken steps to deal with hackers who have developed programs that kick others off the service, allow free access to additional fee areas, transmit "mail bombs" (hundreds of mail pieces within seconds), establish fake accounts and steal credit card numbers.

## AMATEUR RADIO NEWS

• **More infighting among ham operators who prefer particular modes.** There always seems to be groups who favor certain types of operation. We have seen CW vs. SSB, AM vs. FM, AM vs. SSB, DX vs. HF packet, satellite vs. repeater, voice vs. data, weak signal experimenting vs. full power communications, networks vs "information" broadcasting, "my" frequency vs. "your" frequency, "quantity" vs. "quality," closed vs. open repeaters ...and on and on infinitum.

The latest donney-brook involves ATV vs. MACC ...the *Mid-America Coordination Council.* MACC coordinates amateur frequencies in about 20 midwestern states. Well, they want to phase out all existing 70-cm amateur television 6-MHz wide coordinations over 5 years. This would give ATVers the "opportunity" to move up to 900 MHz and above. Each faction has their arguments as to why ATV should or should not move.

ATVers are calling the MACC proposal "airwave piracy!" MACC says ATV operation is little used, uses too much bandwidth, is not compatible with satellite, repeater or packet operation ...and all 70-cm ATV operation should be discontinued as of December 31, 1999. The controversy is bound to come up at the National Frequency Coordinators Meeting scheduled for October 7th in St. Louis.

The fact remains, however, that FCC rule §97.305(c) authorizes wideband ATV at 70-cm and above. On the other hand, the number of VHF-UHF FM repeater, packet and satellite users has increased drastically with the implementation of the no-code Technician license.

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## NTIA SAYS THEY ARE NOT "HOARDING" SPECTRUM

The Federal spectrum has been under fire lately from Congress since they want more transferred to the non-government sector so they can auction it off. The National Association of Broadcasters, has also been trying hard to keep TV spectrum from being auctioned, by pointing instead to the vast "inventory" of Federal spectrum. The National Telecommunications and Information Administration which oversees government frequencies came out with the following statement:

### GOVERNMENT SPECTRUM - MYTHS vs REALITY

1) Myth - The Federal government is hoarding spectrum.

Reality - The Federal government does not hold spectrum in reserve. It only uses what it needs to satisfy the services it provides to the public, including national defense, law enforcement & security, transportation (including air traffic control), natural resources management, and national emergency support. NTIA was directed by the *Omnibus Budget Reconciliation Act of 1993* to examine the spectrum allocated and used by the Federal government and to develop a plan to reallocate at least 200 MHz to the private sector. In its 18 month study, NTIA did not find any reserve (unused) spectrum to meet this 200 MHz requirement. NTIA did identify 235 MHz being used by the Federal government below 5 GHz that resulted in a reasonable balance between Federal costs and public benefits. The cost of moving the Federal agencies from these bands is approximately $500 million. Any future reallocation below 5 GHz will have to be taken from spectrum already being used by the Federal government, and there is a high probability that the cost of relocating will be much higher than the $500 million for the 235 MHz recently reallocated.

2) Myth - The Federal Government controls 94% of spectrum.

Reality - It is true that the Government does have access to 94% of the spectrum below 300 GHz ... but it only has exclusive access to 1.4%, and 93.1% of the allocated spectrum is shared with the private sector. It is also true that the private sector has access to even more spectrum than the Federal Government -- 99% of the allocated spectrum below 300 GHz. The private sector is allocated 5.5% exclusively and shares 93.1% of the allocated spectrum with the Federal government. In shared bands, NTIA and the FCC coordinate the respective activities of the Federal government and the private sector (standards development, frequency assignment and licensing, future domestic and international spectrum plans, and requirements/petitions for new technologies or changes to existing radio service rules and regulations). NTIA and the FCC are equal partners in this endeavor, both trying to meet the requirements of their constituencies and to balance the public interest. NTIA and the FCC have done an outstanding job in balancing the multiplicity of interests and have been a positive force in maintaining the U.S. domestic and global leadership in telecommunications.

3) Myth - The Federal Government uses outdated and inefficient equipment that hogs spectrum, and it has no incentive to do otherwise.

Reality - **EQUIPMENT:** Most common radio equipment used for both Federal and non-federal users are for fixed and mobile communications. Federal radio equipment for fixed and mobile communications is at least 99% commercial off-the-shelf equipment, identical to that available in the private sector. In most cases, the Federal standards are more stringent than those adopted by the private sector for comparable non-Federal applications.

**RECEIVERS:** Receivers are also an important factor in efficient use of the spectrum. Poorly designed receivers are thought to have resulted in more cases of radio interference than poorly designed transmitters. Poor receivers deny spectrum to other users. The private sector in many instances has declined to establish stringent receiver standards. NTIA has adopted effective technical standards for receivers that are second to none to guarantee procurement of high quality receivers resulting in efficient use of the spectrum.

**NARROWBAND TECHNOLOGY:** NTIA and the Federal agencies have also been leaders in the adoption of narrowband technology. These techniques will lead to a doubling and ultimately quadrupling the number of frequencies available to support land mobile communications. Working cooperatively with industry groups and manufacturers, NTIA regulations requiring use of new 12.5 kHz equipment preceded the private sector's adoption by at least a year.

**RADAR:** Another major class of Federal equipment are high power radars used for air traffic control, national defense, drug interdiction, etc. Again, NTIA has adopted very stringent radar spectrum standards that are generally considered the most effective radar standards, worldwide.

**FREQUENCY REUSE:** Spectrum efficiency involves factors such as the minimum distance required to reuse the same frequency. A smaller reuse distance allows many more users in a given frequency band. This is a complex comparison between Federal and non-Federal usage, primarily because of differences in missions. It is hard, for example, to compare the spectrum efficiency of air traffic control communications with that of a diaper delivery service, for the former, effective regulations to assure interference-free operation for safety-of-flight communications mandate large separation distances. The most meaningful comparison of spectrum efficiency is between the Federal Government, and the State and local governments. Taking into account the national scope of many Federal operations, Federal Government reuse distances are quite comparable.

**SPECTRUM OVERLAYING:** Spectrum overlays have been a technique used quite extensively to permit increased spectrum sharing between Federal and private sector users. This is most evident in the FCC regulations for non-licensed devices (FCC Part 15 rules). The vast majority of these devices, such as garage door openers, wireless home security systems, and cordless telephones, operate in bands allocated "exclusively" for Federal use. Through adoption of technical rules and procedures developed cooperatively by the FCC and NTIA, this multi-billion dollar industry has thrived.

**SPECTRUM EFFICIENCY TRADEOFFS:** Achieving high spectrum efficiency involves a number of technical, economic and priority tradeoffs. There are, of course, situations where achieving spectrum efficiency must give way to higher national goals. International treaty obligations and safety-of-life considerations dictate much of the aeronautical and maritime communications and navigation services. Spectrum efficiency can be achieved only to the extent that the former are not compromised.

**SPECTRUM EFFICIENCY PLANNING:** In 1992, the Secretary of Commerce submitted to Congress the Land Mobile Spectrum Efficiency Plan, as required by the *NTIA Organization Act.* The implementation of this plan resulted in more usage of trunking technology (including commercial), doubling the channels in three major Federal land mobile bands through new narrowband technology, and the promotion of sharing with the private sector. Only recently has the private sector adopted a narrowband channel plan. To be cost effective, the Federal sector will continue to buy off-the-shelf equipment with characteristics similar to the private sector.

**INCENTIVES:** The Federal government has a number of incentives to use the spectrum more efficiently. First, the Federal government growth in spectrum usage has been increasing for the past 20 years at 6% per year. This is also true within the private sector. With these increased requirements and the scarcity of spectrum, it is essential from an economic and mission point of view that the Federal government use the latest technology and assignment techniques to satisfy future spectrum needs to provide public services. It is also imperative that the highest standards possible be maintained to ensure the safety-of-life in providing public services. Since the vast majority of the spectrum is shared with the private sector, there is an incentive for the government to cooperate with FCC to insure progress in technology, integration of future requirements, insurance that interference free operation is maintained for all radio communication operations and that U.S. telecommunications industry growth continues.

4) Myth - It is easy and inexpensive to relocate Federal government spectrum users.

Reality - Approximately 94% of the Federal government (271,000 assignments) and the private sector (3,120,000 licenses) spectrum usage is below 6 GHz. The investment is in the hundreds of billions of dollars. It obviously will be exceedingly difficult (economically, politically, and technically) to move either the Government or private sector. A recent example of this was when NTIA was directed by law *(Omnibus Budget Reconciliation Act of 1993)* in August 1993 to study the Federal government's use of spectrum below 5 GHz and to determine what 200 MHz of spectrum could be reallocated to the private sector over a 15-year period. NTIA completed its preliminary report in February 1994 and suggested various bands totaling of 200 MHz. A final report was provided in March 1995 after public, FCC and Federal agency comments were incorporated. The final reallocation was 235 MHz, with a reallocation cost estimate of approximately $500 million. The reallocation is to occur from 1995 through 2004. This task required dozens of meetings with Federal agencies, the FCC, and private sector over an 18-month period. It required numerous trade-offs and adjustments within the Federal agencies as well as the migration to other bands. It will be even more difficult and expensive in the future to carve out more spectrum below 6 GHz.

As the Federal government continues to downsize, the use of modern wireless communications will be an increasingly essential element to achieve the desired organizational efficiencies. Lack of adequate Federal spectrum resources will tend to counter Administration and Congressional goals in re-engineering governmental functions.

5) Myth - The Federal government rarely turns spectrum over for greater or exclusive private sector use.

Reality - NTIA continues to work with the FCC, the private sector, and Federal agencies to use spectrum more efficiently and to maintain its flexibility to share the spectrum with all potential users. Since 1978, NTIA has coordinated the reallocation of more than 5,000 MHz of Federal government spectrum to enable greater private sector use. The Federal government also plans to increase its sharing of 698 MHz with the private sector, domestically and internationally, over the next 9 years (1995-2004). As part of that effort, NTIA has recently identified 235 MHz of Federal spectrum to be turned over to the FCC for private sector use. A full 50 MHz of that spectrum has already been reallocated for non-government use. Moreover, in anticipation of the International Telecommunications Union World Radiocommunications Conference (ITU/WRC) in October 1995, NTIA has coordinated the release of 3 MHz of Federal government spectrum for exclusive mobile satellite use for little low earth orbiting satellites (LEOs). NTIA has also arranged for the shared use of 360 MHz of government spectrum for mobile satellite feeder links for big LEOs.

6) Myth - There is 6 GHz of shared spectrum below 30 GHz that the private sector does not have access to because there are no FCC rules.

Reality - There is approximately 6 to 7 GHz of spectrum below 30 GHz in the *Code of Federal Regulations (CFR),* Title 47, Part 2.106, that do not reference any particular service rules. Some think that if there is no information in the table, that the private sector does not have access to this spectrum and therefore, the Government has use of the entire shared spectrum. This is not true. The lack of the part reference information in the table does not mean that there are no service rules for a band. The reference information in the table is for information only and is not regulatory in nature. There are many bands in the table that have no reference in the table, but by looking throughout the CFR, there are rules that govern the band which must be complied with by any applicant wishing to obtain a license. There are still other bands, such as radio astronomy, where no rules are necessary. In fact, there are over 52,000 licenses that have been granted in bands below 30 GHz that have no reference in the table. Obviously, the FCC granted these licenses based on the rules within the CFR. Therefore, it can be concluded that 6 GHz of shared spectrum is not laying fallow with no private sector uses, nor is the private sector inhibited from applying for licenses or petitioning the FCC to operate in these bands.

# W5YI REPORT
Nation's Oldest Ham Radio Newsletter

Page #9
October 1, 1995


## LATEST RF RADIATION RESEARCH - AND FASHION!

Two recently announced research projects are aimed at human exposure to radiofrequency (RF) fields. One is a report paid for by the FCC; the other is a project of the cellular industry to study cellular phone radiation into the human head.

Meanwhile, you don't have to wait for research - you can already buy a special hat to shield your brain from confusing RF waves.

### Report to the FCC

The FCC is examining new, possibly more-stringent guidelines for exposure to RF fields *(see September 15, 1995 W5YI Report.)* Amateur radio, which has been categorically excluded, may be subject to these RF standards. As a part of this work, the FCC hired RF exposure researcher Richard Tell, K5UJU of Las Vegas, to investigate various issues. Tell is also a member of the standards-setting IEEE Committee on Man and Radiation. Among his studies, Tell examined the extent of RF exposures around cellular base stations and the effectiveness of RF-proof clothing and a RF exposure warning device.

That the budget-strapped FCC hired an outside consultant to research these questions is remarkable. It demonstrates the serious nature of RF safety concerns at the FCC. The Commission is very constrained financially. It usually relies on private industry to bring technical issues to its attention, even though industry representatives are usually lobbying for a particular outcome to a proceeding.

The massive (159 pages) and highly technical report would be of interest to engineers directly concerned with RF safety issues.

### Cellular Base Stations

With the increasing need for system capacity, and the appearance of new competition to cellular service from other services, cellular licensees look to installing thousands more base stations across the country.

Neighborhood groups and local governments sometimes react hysterically, however, to the construction, or proposed construction, of cellular base stations in an area. Cellular licensees have experienced the gamut of obstacles, with zoning commissions limiting or prohibiting cellular construction - some even dictating to the licensee how much power or which frequencies may be used, or demanding concessions such as free cellular products and service.

Licensees proposing new sites also sometimes encounter zoning hearings packed with parents anxious about "irradiation" of their children and board members concerned about the proliferation of "eyesore" antennas.

Cellular telephone base stations typically operate with transmission powers of 100 W ERP per channel and often less. RF fields in the immediate vicinity of even low power emitters can often be substantial with respect to standards for safe human exposure.

"RF fields produced by typical cellular telephone base stations, however, in the context of neighborhood exposures at some hundreds of feet from the station are normally extremely weak, with power densities commonly less than one microwatt per square centimeter," Tell reported to the FCC. "Compared to RF field exposure limits measured in hundreds of microwatts per square centimeter or greater, such fields are inconsequential from a public exposure perspective."

"Using the controlled environment limits of the latest version of the ANSI/IEEE standard (which are the same as the limits of the 1982 ANSI standard presently used by the FCC), maximum 'keep-out' distances for mainbeam exposure to directional antennas of approximately 18-20 feet are indicated for 30 simultaneously active 100 watt [cellular] channels. ...For antennas that are mounted above head height, the likelihood of significant exposure to nearby workers on roof tops is low because of the rapid decrease in power density with vertical height below the antenna."

Tell continued: "Another obvious conclusion is that the relatively short distances at which RF fields may exceed applicable guidelines for exposure suggest that almost all problem sites will be those with roof-mounted antennas. Hence, any efforts to assess compliance with FCC standards should go into assessing roof top cell sites. The issue of neighborhood exposure in the vicinity of cellular base stations is irrelevant to any consideration of compliance with applicable guidelines for safety because of the minuscule levels."

### RF-proof Clothing

A German-made material called Naptex(R) is used to make RF protective clothing. Such clothing is worn, for example, by workers who have to climb towers during which they may come into contact with RF current carrying conductors, or where reduced exposure to RF is desirable. Naptex combines steel and polyester fibers with cotton yarn.

After studying the results of several experiments, Tell concluded that the fabric can significantly attenuate RF electric fields from a few MHz to several GHz. Tell recommended that socks made of the special fabric could be desirable in coupling body currents to ground through the shoe.

Some researchers are concerned that wearing the suit in some work environments might lead to a

greater hazard if one accidentally contacts energized conductors.

**RF body alarm**

A portable device called the Nardalert can sound an alarm when the wearer is exposed to certain RF magnetic field intensities. Tell found that the positioning of the device relative to the RF field and its location on the body affected its ability to respond to energy at half the maximum permitted exposure (MPE). In some cases the alarm did not sound even when in fields significantly greater than half of the MPE.

However, because the regions in which the device did not respond properly were quite small, Tell concluded that in ordinary practice the device should alarm properly since the wearer would be moving about. "The Nardalert is a warning device and should not be construed as something that will make a person safe; it must be used with some knowledge as to its capabilities and deficiencies," Tell reported.

**Cellular Radiation to the Head**

Wireless Technology Research, a scientific body established by the cellular industry, announced that it has awarded almost $185,000 to Dr. Om Gandhi, a professor of electrical engineering at the University of Utah, to study portable wireless communication instruments.

Dr. Gandhi will study computational methods for determining RF absorption rates. His work will include calculating absorption rates for simple models exposed to either cellular telephones or simple dipole antennas. The models include objects made of simulated brain and skull materials.

**Radio Free Head**

A company called ShieldWorks (Internet address: shieldwork@aol.com) is advertising the "Radio Free Head CyberCap" ($39.95) to protect your head from toxic RF radiation. Humans are exposed to RF from many sources, but the company believes that their cap shields the pineal gland and hypothalamus from unwanted RF energy.

To us the CyberCap looks like a metallic orange baseball cap with a goofy radioactivity symbol on the front. In reviewing the product, WIRED magazine noted that not only does electromagnetic radiation leak from appliances and power lines, but "covert government agencies transmit mind-debilitating rays from huge machines hidden in urban warehouses around the world." That is clearly a use of Federal spectrum not found in the Table of Frequency Allocations. Maybe we need CyberCaps, Naptex clothes, and Nardalerts for every member of the family!

**RESTRICTIVE ANTENNA COVENANTS HOME PAGE NOW RESIDING ON THE WORLD WIDE WEB**

Clearwater, Florida- After fighting with his condominium association for almost five years and being engaged is a lawsuit for over three, a Florida ham radio operator has "gone public" with the story. Don Stoner, W6TNS, has opened a "home page" on the World- Wide Web of the Internet.

Stoner claims it is an unconstitutional violation of civil rights, and a restriction of freedom of speech, to prevent hams from communicating with friends made all over the world. This is what happens when condominium associations prevent Amateurs from erecting any antenna. In page after page of correspondence, Stoner shows what can happen when a condominium association decides to oppose the installation of an Amateur Radio antenna, without regard to the consequences or expense to the unit owners. Covenants are agreements concerning restrictions on property use.

The "home page" also includes the history file of another ham in Altamonte Springs, Florida with similar problems. In this instance the ham acted as his own attorney and prevailed against his condominium association. Stoner has included the complete - more-correspondence history so that other hams can see how to oppose oppressive and unconstitutional restrictive covenants against ham radio antennas.

In another unique first for his Web page, Stoner has published a on-line book called "Condo Wars." In it he warns Amateurs against buying property which has restrictive antenna covenants attached. But should they do so, he discusses their relationship with the condominium rules and the board of directors.

Those with Internet capability can access the home page at the following address (note that upper and lower case must be entered correctly):

http://www.hamweb.com/~sjl/STONER/ANTENNA.html

Stoner's home page has become very popular in a short space of time, with "hits" from all over the world. The furthest access to date is from a ham in Hobart, Tasmania. A ham friend of many years accessed the information from Johannesburg, Republic of South Africa.

For additional information on the Stoner vs. 440 West, Inc. lawsuit, contact:

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